CONTENTS

PART A

Section 1. Characterization and Physical Properties of $YBa_2Cu_3O_{7-x}$, $Y_2Ba_4Cu_7O_{15\pm x}$ and $YBa_2Cu_4O_8$

The high-T_c superconducting phases of the $Y_2Ba_4Cu_{6+n}O_{14+n}$ family
J. Karpinski, S. Rusiecki, E. Kaldis and E. Jilek 3

Pressure dependence of T_c and anisotropic features in the family $Y_2Ba_4Cu_{6+n}O_{14+n}$ (n=0, 1, 2)
B. Bucher, J. Karpinski, E. Kaldis and P. Wachter 20

123 near equilibrium samples: Anomalies of the lattice parameters and some physical properties
S. Rusiecki, B. Bucher, E. Kaldis, E. Jilek, J. Karpinski, C. Rossel, B. Pümpin, H. Keller, W. Kündig, T. Krekels and G. Van Tendeloo 31

Cu–O bond and T_c changes in 123, 124 & 247-superconductors
A.W. Hewat, P. Fischer, E. Kaldis, E.A. Hewat, E. Jilek, J. Karpinski and S. Rusiecki 39

$YBa_2Cu_4O_8$: A strong coupling high-T_c superconductor?
J. Schoenes, E. Kaldis and J. Karpinski 50

Pressure-induced structural and electronic properties of high-T_c superconducting materials studied by neutron scattering
J. Mesot, P. Allenspach, U. Staub, A. Furrer, H. Blank, H. Mutka, C. Vettier, E. Kaldis, J. Karpinski and S. Rusiecki 59

Planes, chains and ribbons – Charge distribution in superconducting cuprates
J.L. Tallon and G.V.M. Williams 70

Frequency, linewidth and relaxation of Cu NQR signals in the superconductor $YBa_{1.9}Ca_{0.1}Cu_4O_{8\pm y}$
I. Mangelschots, M. Mali, J. Roos, H. Zimmermann, D. Brinkmann, J. Karpinski, E. Kaldis and S. Rusiecki 78

Experimental and theoretical characterization of the $YBa_2Cu_3O_7/YBa_2Cu_4O_8$ phase transformation
M. Fendorf, C.P. Burmester, L.T. Wille and R. Gronsky 84

Structural defects in $YBa_2Cu_3O_x$ superconductors
G. Van Tendeloo and S. Amelinckx 92

Thermodynamics of oxygen ordering in $YBa_2Cu_3O_z$
D. de Fontaine, G. Ceder and M. Asta 108

Structural phase diagram and equilibrium oxygen partial pressure of $YBa_2Cu_3O_{6+x}$
N.H. Andersen, B. Lebech and H.F. Poulsen 124

Cu nuclear quadrupole resonance study of $YBa_2Cu_4O_8$ at high pressure
H. Zimmermann, M. Mali, I. Mangelschots, J. Roos, D. Brinkmann, J. Karpinski, S. Rusiecki and E. Kaldis 132

Spin susceptibility and spin dynamics at Cu sites in $YBa_2Cu_4O_8$
H. Zimmermann, M. Mali, I. Mangelschots, J. Roos, L. Pauli, D. Brinkmann, J. Karpinski, S. Rusiecki and E. Kaldis 138

Thermal expansion and symmetry of $YBa_2Cu_3O_7$
D. Dernbach and K.H. Ehses 146

Influence of elaboration on the microstructure and on the electrical and magnetical properties in YBaCuO ceramics
J. Ayache, J. Sabras, M. Gasgnier, C. Monty, R. Maury, X. Bozec, A.R. Fert, J.P. Redoules, E. Snoeck and C. Roucau 152

Evidence for a Kosterlitz–Thouless transition in high quality YBaCuO ceramics
J. Fontcuberta, J. Jurado, X. Obradors, M.V. Cabañas, M. Vallet and J.M. Gonzalez-Calbet 160

Section 2. Crystal Growth and Defects in Y–Ba–Cu–O Phases

Magnetic properties of mm-sized $YBa_2Cu_3O_{7-x}$ single crystals
K. Schönmann, B. Seebacher and K. Andres 169

A non polluting single crystal growth process for YBaCuO and phase diagram studies
K. Dembinski, M. Gervais, P. Odier and J.P. Coutures 177

Flux growth and characterisation of $YBa_2Cu_3O_{7-\delta}$ single crystals
A. Drake, J.S. Abell and S.D. Sutton 187

$YBa_2Cu_3O_{7-y}$ superconducting oxides obtained by arc-casting
E. Yanmaz, J.S. Abell and I.R. Harris 193

$BaZrO_3$: Synthesis, properties and compatibility with $Ba_2YCu_3O_{7-x}$
G. Stenstrop and J. Engell 200

Influence of annealing under oxygen on the chemical and superconducting properties of $YBa_2Cu_3O_x$ single crystals
L. Nganga, P.V. Huong, J.P. Chaminade, P. Dordor, K. Fröhlich and M. Jergel 208

HREM study of high-T_c $HoBa_2Cu_3O_{7-\delta}$ superconductors
Y. Yan, M.G. Blanchin and G. Fuchs 215

Dislocations in $YBa_2Cu_3O_{7-\delta}$ ceramics plastically deformed at room temperature
J. Rabier and M.F. Denanot 223

A study on the role of oxygen in the inelastic behaviour of $YBa_2Cu_3O_{7-x}$
E. Bonetti, E.G. Campari, P. Cammarota, A. Casagrande and S. Mantovani 231

Oxygen diffusion, oxygen vacancy concentrations and chemical diffusion in $Y_{1-u}Ba_{2-v}Cu_{3-w}O_{7-\delta}$
J. Sabras, G. Peraudeau, R. Berjoan and C. Monty 239

Vacancy behaviour and hole numbers in $YBa_2Cu_3O_{7-x}$
C. Calandra and T. Minerva 247

Section 3. Thin Films and Thick Films of Y–Ba–Cu–O Phases; Multilayers

Artificially prepared $YBa_2Cu_3O_7/PrBa_2Cu_3O_7$ superlattices: Growth and superconducting properties
Ø. Fischer, J.-M. Triscone, L. Antognazza, O. Brunner, A.D. Kent, L. Mieville and M.G. Karkut 257

RHEED studies of epitaxial growth of YBCO-films prepared by thermal co-evaporation
F. Baudenbacher, H. Karl, P. Berberich and H. Kinder 269

Comparison of YBCO-films prepared by laser ablation and sputtering
B. Stritzker, J. Schubert, U. Poppe, W. Zander, U. Krüger, A. Lubig and Ch. Buchal 279

Pulsed laser deposition of high-T_c superconductor films in the ultraviolet, visible, and near-infrared range
W. Kautek, B. Roas and L. Schultz 292

In-situ MBE growth of epitaxial CuO films with a source of activated oxygen
J.-P. Locquet 300

ECR-plasma assisted laser ablation of as-deposited superconducting thin films for application in microelectronics
K. Deneffe, P. Van Mieghem, B. Brijs, W. Van Der Vorst, R. Mertens and G. Borghs 307

In-situ growth of Y–Ba–Cu–O films by laser deposition
G.G. Bentini, M. Bianconi, L. Correra, R. Fabbri, A. Lamagna, S. Nicoletti, R. Nipoti, J. Ramos Archuis, F.C. Matacotta and C.U. Segre 315

Composition and thickness of the surface layer on high-T_c superconducting $YBa_2Cu_3O_{7-d}$ thin films, studied by ARXPS
W.A.M. Aarnink, J. Gao, H. Rogalla and A. van Silfhout 321

In-situ DC sputtered high-T_c Y–Ba–Cu–O films
S. Zarembinski, J. Ramos, Z.G. Ivanov and T. Claeson 329

Epitaxial $YBa_2Cu_3O_7$ and $GdBa_2Cu_3O_7$ thin films grown in-situ by single target D.C. sputtering
M.G. Karkut, M. Guilloux-Viry, A. Perrin, O. Pena, J. Padiou and M. Sergent 336

Layer by layer preparation of $(Y_{1-x}Pr_x)Ba_2Cu_3O_7$ alloy thin films
L. Antognazza, J.-M. Triscone, O. Brunner, L. Mieville, M.G. Karkut and Ø. Fischer 344

Deposition of large area $YBa_2Cu_3O_{7-\delta}$ thin films by magnetron sputtering
G. Wagner and H.-U. Habermeier 352

Rapid thermal annealing of YBaCuO thin films sputtered on $SiO_2/Si_3N_4/Si$ substrates
J. Baixeras, F. Carrie, F. Hosseini Teherani and A. Kreisler 359

Influence of rapid thermal annealing parameters on properties of YBaCuO thin films sputtered on polycrystalline zirconiá
J. Baixeras, F. Carrie, F. Hosseini Teherani and A. Kreisler 366

(Y–Er)–Ba–Cu–O superconducting thin films obtained ex-situ: Toward submicrometric patterning by electron beam lithography
P. Cocciolo, M. Gentili, C. Giovannella, M. Iannuzzi, L. Luciani, V. Merlo, R. Messi and L. Paoluzi 374

Study of in situ laser deposited YBCO thin films
G. Brorsson, J.A. Alarco, Z.G. Ivanov, H. Olin, P.-Å. Nilsson and T. Claeson 383

Superconducting films of $YBa_2Cu_3O_{7-\delta}$ deposited using Nd:YAG and XeCl lasers – A comparative study
D.S. Misra, A.A.C.S. Lourenco and S.B. Palmer 391

Optimization of the in situ process for $YBa_2Cu_3O_x$ films prepared by laser ablation
M. Schilling, K.D. Laue and U. Merkt 400

In situ growth of high-temperature superconductor thin films with evaporation techniques using an ozone jet
H.M. Appelboom, J.P. Adriaanse, H.I. de Groot, G. Rietveld, D. van der Marel and J.E. Mooij 407

Optimisation of $YBa_2Cu_3O_7$ thin films for multilayers
J.A. Edwards, N.G. Chew, S.W. Goodyear, J.S. Satchell, S.E. Blenkinsop and R.G. Humphreys 414

Coevaporated thin films of Y–Ba–Cu–O utilizing quadrupole mass-spectrometer rate control
J. Hudner, H. Ohlsén, L. Stolt and M. Östling 422

$YBa_2Cu_3O_{7-x}$ superconducting thin films by sequential evaporation on alumina substrates
X. Queralt, M. Varela, M.V. Garcia-Cuenca and J.L. Morenza 430

Superconducting Y–Ba–Cu oxide thin films formed by ion beam mixing
B. Rauschenbach 438

Organometallic chemical vapor deposition of superconducting $YBa_2Cu_3O_{7-\delta}$ films
O. Thomas, A. Pisch, E. Mossang, F. Weiss, R. Madar and J.P. Senateur 444

Ion beam mixing of $La(OH)_3$/Cu and $La(OH)_3$/SrO/Cu multilayers
J.P. Mathevet, A. Traverse, S. Megtert and J. Chaumont 451

YBaCuO and YBaCuO/Ag thick films on Ce-TZP, Y-TZP and spinel substrates
E. Saiz, M.I. Osendi, P. Miranzo, J. Requena and J.S. Moya 458

HTSC-thick films printed on different substrates
P. Šťastný, R. Kužel and V. Skácel 464

Deposition thick film patterns of the high-T_c superconducting Y–Ba–Cu–O and Bi–Sr–Ca–Cu–O systems on ceramic substrates
K. Przybylski, J. Koprowski, J. Obłąkowski and M. Wierzbicka 470

Annealing studies of ultrasonic spray pyrolyzed $YBa_2Cu_3O_{7-x}$ thin films on various substrates
S.P.S. Arya and H.E. Hintermann 478

Preparation of $YBa_2Cu_3O_{7-x}$ films by low-pressure RF-plasma deposition
H. Jaeger, K. Schulze and H. Frey 486

Magnetisation and transport critical current measurements of plasma sprayed YBaCuO
A.M. Bouanani, R. Suryanarayanan, G. Brun, O. Gorochov and R. Kormann 493

Preparation of superconductor materials by the roller-splat cooling method
R. El Farsi, O. Durmeyer, C. Chaumont, M. Drillon, P. Poix and J.C. Bernier 501

Preparation of YBaCuO superconducting coatings by thermal spraying
J. Lacombe, J. Danroc and G. Kurka 509

Section 4. Bi-Cuprates, Bulk

Phase diagram studies in the Bi(Pb)–Sr–Ca–Cu–O system
P. Strobel and T. Fournier 519

Crystal growth and anisotropic properties of textured Bi–Sr–Ca–Cu–O samples
L. Trouilleux, G. Dhalenne, J. Jegoudez, A. Revcolevschi, P. Monod, P. Tremblay, R. Kormann and J.P. Ganne 526

Effects of substitution of copper by iron and cation distribution in the Bi–Ca–Sr–Cu–O superconducting compounds
M. Mehbod, E. Vanlathem, R. Deltour, P.H. Duvigneaud and P. Wyder 536

Influence of lead substitution on the properties of the superconducting materials $Bi_{2-x}Pb_xSr_2Ca_{n-1}Cu_nO_{2n+4}$
J. Schneck, J.C. Toledano, L. Pierre, A. Litzler, D. Morin, J. Primot, H. Savary and C. Daguet 545

Dissipative effects in $Bi_2Sr_2Ca_1Cu_2O_{8+x}$ and $Bi_{1.7}Pb_{0.3}Sr_2Ca_1Cu_2O_{8+x}$ single crystals
E. Agostinelli, D. Fiorani, R. Folch, J. Tejada and A.M. Testa 553

Preparation of single phase bismuth-based 2212 and 2223 superconducting oxides, and quantitative X-ray diffraction analysis of 2212 and 2223 phase mixtures
A. Briggs, B.A. Bellamy, I.E. Denton and J.M. Perks 559

Longitudinal velocity and attenuation of sound in 80 K phase Bi–Sr–Ca–Cu–O superconductor
J. Dominec, C. Laermans, A. Vanelstraete and V. Plecháček 568

Investigation of the homogeneity of bulk ceramic 2223 Bi(Pb)SrCaCuO superconducting oxide
J.M. Perks, I.E. Denton and A. Briggs 576

Mössbauer studies of the system $Bi_2Sr_{1+n}Fe_nO_x$ (n=2, 3) isostructural with the high-T_c superconductors $Bi_2Sr_2Ca_{n-1}Cu_nO_x$ (n=2, 3)
M. Pissas, A. Kostikas, D. Niarchos and A. Simopoulos 581

Synthesis, Mössbauer studies and superconductivity or magnetism of $Bi_2Sr_mCa_n(Cu_{1-x}Fe_x)_{m+n-1}O_y$
S. Azdad, O. Gorochov, J.L. Dormann, S. Sayouri, H. Pankowska and R. Suryanarayanan 588

Stacking polytypes in the systems Bi–Pb–Sr–Ca–T–O with T= Mn, Fe, Co, Ni, Cu
A. Ehmann, T. Fries, S. Kemmler-Sack, S. Lösch, T. Rentschler, M. Rygula, M. Schlichenmaier and W. Wischert 596

Influence of strontium vacancies on the superconductivity of $Bi_2Sr_{2-z-x}La_xCuO_{6+y}$
M.T. Caldes, N. Casañ-Pastor, J.M. Navarro, F. Perez, A. Fuertes, P. Gomez-Romero, X. Obradors and C. Miravitlles 604

Something new and something old on the phases in the superconducting systems
I. Vasilyeva, P. Samoilov, N. Naumov, S. Gromilov, I. Curopyatnik, Ya. Gibner and V. Malakhov 612

Determination of the phase homogeneity of samples of Bi–Pb–Sr–Ca–Cu–O ceramics by clusterization of electron probe microanalysis data
I.I. Bondarenko, V.V. Rezvitskii, B.A. Treiger, L.N. Mazalov, V.S. Kravchenko, L.A. Volkov, V.G. Bessergenev, O.G. Potapova and E.S. Zolotova 620

Superconducting properties and oxygen mobility correlation in Bi(Pb)–Sr–Ca–Cu oxides
M.A. Dinia, O. Pena, C. Perrin and M. Sergent 628

Effects of MgO and Al_2O_3 additions on the formation of the high-T_c phase and superconducting properties in the Bi–Pb–Sr–Ca–Cu–O ceramic system
G. Calestani, M.G. Francesconi, L. Zini, M. Sparpaglione and L. Bonoldi 635

Sr content and superconductivity in the Bi–Sr–Cu–O system
F. García-Alvarado, E. Morán, M.A. Alario-Franco, M.A. González, J.L. Vicent, A.K. Cheetham and A.M. Chippindale 643

On the oxides of Bi, Sr and Cu
M.T. Casais, P. Millan, I. Rasines and J.A. Campa 651

Weldability of Bi-based superconductor and flame welding method
Li Biaorong, Gao Xin and Chen Wanping 660

Microstructure and superconducting properties of Bi–Pb–Sr–Ca–Cu–O synthesized by the alkoxy sol–gel method
M. Dhalle, C. Van Haesendonck, Y. Bruynseraede, J. Kwarciak and O. Van der Biest 663

Section 5. Bi-Cuprates, Thin and Thick Films

Electron-beam evaporation and interface characterization of $Bi_2Sr_2Ca_1Cu_2O_y$ thin films on $SrTiO_3$- and Si-susbstrates
V. Klocke, A. Pfau, W. Albrecht, C. Valder, U. Breuer, H. Kurz, M. Fleuster and G. Güntherodt 671
A study of annealing Bi–Pb–Sr–Ca–Cu–O thin films with Pb or PbO
H. Nakano, S. Nicoud, M. Suzuki, G. Burri and L. Rinderer 679
Growth of the 110 K superconducting phase and characterization of Pb-doped Bi–Sr–Ca–Cu–O thin films prepared by sputtering
S. Labdi, H. Raffy, S. Megtert, A. Vaures and P. Tremblay 687
BiSrCaCuO films made by coevaporation: Influence of the initial composition
P. Luzeau, X.Z. Xu, M. Laguës, M. Nanot and F. Queyroux 695
Annealing effects on MBE deposited thin films of oriented Bi-compound superconductors
J.A. Grange, A.S. Flodström and H.J. Bernhoff 703
High-T_c superconducting $YBa_2Cu_3O_{7-d}$ and Bi–Pb–Sr–Ca–Cu–O thin films deposited by laser ablation
J. Levoska, T. Murtoniemi and S. Leppävuori 710
Chemical vapour deposition of the superconducting phase in the Bi–Sr–Ca–Cu–O system from different halide precursors
A. Hårsta and J.-O. Carlsson 716
Hyper-diamagnetism in superconducting Bi(Pb)–Ca–Sr–Cu–O thick films
J. Hagberg, E. Lähderanta, G. Zsolt, S. Leppävuori, I. Kirschner, R. Laiho, A. Uusimäki, T. Porjesz, I. Dódony, Gy. Kovács, J. Levoska and T. Kármán 730

CONTENTS

PART B

Section 6. n-Doped High-T_c Compounds, La-Cuprates, Other High-T_c-Materials

Electronic structure of p-type and n-type cuprate superconductors
S. Uchida, H. Takagi and Y. Tokura 741

Old and new oxide superconductors
R.J. Cava, B. Batlogg, J.J. Krajewski, W.F. Peck Jr. and L.W. Rupp Jr. 749

Valence states of copper in $Nd_{2-x}Ce_xCuO_{4-\delta}$ studied by X-ray and ultraviolet photoelectron spectroscopy
H. Buchkremer-Hermanns, P. Adler and A. Simon 760

Field-induced transformations of the spin ordering in Nd_2CuO_4
D. Petitgrand, A.H. Moudden, P. Galez and P. Boutrouille 768

Normal state reflectance of NdCeCuO single crystals
P. Calvani, M. Capizzi, S. Lupi, P. Maselli, M. Virgilio, A. Fabrizi, M. Pompa, W. Sadowski and E. Walker 776

Defects and flux contamination in $Ln_{2-x}Ce_xCuO_4$ (Ln=Nd, Gd) crystals – Oxygen disorder in Gd_2CuO_4 crystals
P. Galez, P. Schweiss, G. Collin and R. Bellissent 784

Temperature dependent single crystal X-ray diffraction study of the T^* phase compound $(La_{1.20}Tb_{0.72}Pb_{0.08})CuO_4$
P. Bordet, J.J. Capponi, C. Chaillout, S-W. Cheong, J. Chenavas, Z. Fisk, T. Fournier, J.L. Hodeau, D.B. Mc Whan, A. Varela-Losada and M. Marezio 792

Superconducting properties of $Ln_{2-x}M_xCuO_{4-y}$ (Ln=Pr, Nd, Sm, Eu; M=Ce, Th) under pressure up to 100 kbar
J. Beille, A. Gerber, Th. Grenet, M. Cyrot, J.T. Markert, E.A. Early and M.B. Maple 800

Preparation and characterization of 80 K superconducting $Pb_2Sr_2Y_{1-x}Ca_xCu_3O_{8+\delta}$ single crystals
J.J. Capponi, O. Chmaissem, T. Fournier, M.F. Gorius, S. Korczak, M. Marezio and J.L. Tholence 808

Oxygen stoichiometry, structure and superconductivity in the superconducting series $Pb_2Sr_2Y_{1-x}Ca_xCu_3O_{8+\delta}$
C. Chaillout, P. Bordet, J.J. Capponi, R.J. Cava, J. Chenavas, E.A. Hewat, M. Marezio, A. Santoro and B. Souletie 816

Crystal growth and physical properties of $Nd_{2-x}Ce_xCuO_{4-y}$ single crystals
W. Sadowski, M. Affronte, M. François, E. Koller and E. Walker 824

Influence of fluorine-gas treatment on the structural and physical properties of La_2CuO_4
B. Chevalier, A. Tressaud, B. Lepine, C. Robin and J. Etourneau 832

Superconductivity in La–Ba–Ca–Mg–Cu_3–O_z system
L. Ouhammou, R. Suryanarayanan, S.R.Murthy, M. Gasgnier, M.O. Ruault, P. Tremblay and O. Gorochov 840

Cu–Pb–Ag–O system as a possible superconductor at $T>200$ K
D. Djurek, V. Manojlović, Z. Medunić, N. Martinić and M. Paljević 847

Transport and magnetic properties versus hole doping in (La, Nd)$_2NiO_{4+\delta}$
X. Granados, X. Batlle, M. Medarde, X. Obradors, J. Fontcuberta, J. Rodriguez, M. Vallet, J. Gonzalez, J. Alonso and M.J. Sayagues 853

Phase conversion in La_2CuO_4 superconductors
J.C. Park, P.V. Huong, J.C. Grenier and A. Wattiaux 862

EPR study of Fe-doped $La_{1.85}Sr_{0.15}CuO_4$
A. Sienkiewicz, M.Z. Cieplak, G. Xiao and C.L. Chien 870

Structural distortion in a 123-superconductor isomorph $|Ba_2LaCu_2O_6|(NbO_2)$
M.-J. Rey, Ph. Dehaudt, J.C. Joubert and A.W. Hewat 878

Search of superconductivity in ternary oxides based on d^1 ions
C. Benvenuti and R. Chipaux 884

XRD and magnetic studies on the $Lu_{0.5}RE_{0.5}Ba_{2-x}Sr_xCu_3O_{7-y}$ series of superconducting compounds, with RE=rare earth and $x=0$, 1
C. Mitros, V. Psyharis, A. Koufoudakis, H. Gamari-Seale and D. Niarchos 892

A structural study of tetragonal $(Ca_{1-x}Ba_xLa)(Cu_{3-y}Pt_y)O_{7-z}$ "single" crystals
U. Amador-Elizondo, M.A. Señaris, E Moran, M.A. Alario-Franco, A. Vegas, M. Martinez-Ripoll and J. Ibañez 900

Variation of $YBa_2(Cu_{1-y}Co_y)_3O_{6+x}$ symmetry at constant stoichiometry: Relation with superconducting properties
H. Renevier, J.L. Hodeau, T. Fournier, P. Strobel, M. Marezio, J.C. Martinez and J.J. Prejean 907

Crystal fields in $Nd_{2-x}Sr_xNiO_{4+y}$
A.T. Boothroyd, S.M. Doyle, M.P. Sridhar Kumar, D.McK. Paul and R. Osborn 915

Structural, magnetic and electrical properties of strontium-doped neodymium nickelate
M.P. Sridhar Kumar, S.M. Doyle and D.McK. Paul 920

Crystal growth of $BaPbO_3$ and $BaPb_{1-x}Bi_xO_3$ from BaO–PbO–PbO_2–Bi_2O_3 solution
B.M. Wanklyn, Chen Changkang, J.W. Hodby and C.J. Salter 926

Local environment X-ray absorption study of superconducting Ba–K–Bi–O
O. Durmeyer, E. Beaurepaire, J.P. Kappler, C. Hornick and M. Drillon 934

Relation structure–metallicity in Bi-substituted multilayers ranging from $BaPbO_3$ to Ba_2PbO_4
M. Licheron and F. Gervais 940

Electrical transport in the $Ba_{n+1}(Pb, Bi)_nO_{3n+1}$ family
Q. Xu, W.T. Fu, J.M. van Ruitenbeek, L.J. de Jongh, M. Drillon and Y. Bruynseraede 948

Characterization of sputtered films of Tl–Ba–Ca–Cu–O
J. Chrzanowski, J.C. Irwin, B. Heinrich, A. Curzon, N. Fortier, A. Cragg, J. McCubbin, A.A. Fife and J. Vrba 956

Section 7. General Physical Properties

Investigations of the electronic structure of cuprate superconductors by high-energy spectroscopy
J. Fink, N. Nücker, H. Romberg, M. Alexander, P. Adelmann, J. Mante, R. Claessen, T. Buslaps, S. Harm, R. Manzke and M. Skibowsky 967

High-resolution electron spectroscopy of high-T_c superconductors
Y. Petroff 979

High-T_c superconductors: An introduction and Raman spectroscopy
M. Cardona 989

Magnetic and electronic properties of $YBa_2Cu_3O_x$ ($6.5<x<7.0$) studied by muon spin rotation
B. Pümpin, H. Keller, W. Kündig, I.M. Savić, J.W. Schneider, H. Simmler, P. Zimmermann, E. Kaldis, S. Rusiecki, C. Rossel and E.M. Forgan 994

Analysis of the anisotropic London penetration depth in $YBa_2Cu_3O_7$ fine particles
H. Stroumbos and P. Monod 1009

Effect of hydrogen in $YBa_2Cu_3O_7$ studied with the muon spin rotation technique
H. Glückler, Ch. Niedermayer, G. Nowitzke, E. Recknagel, A. Weidinger and J.I. Budnick 1016

^{89}Y NMR studies of the electronic and magnetic properties of the 123 compounds
H. Alloul, T. Ohno and P. Mendels 1022

The electronic spectra of superconducting and non-superconducting oxocuprates
P. Adler, A. Breitschwerdt, H.-U. Habermeier, G. Mertens and A. Simon 1039

Field dependence and anisotropy of the Meissner effect in sintered and dilute powders of $YBa_2Cu_3O_7$
N. Bontemps, P. Monod and P. Regnier 1046

YBaCuO critical magnetic field H_{c2} determination from the flow regime dissipation
P. Mocaër, M. Laguës, U. Dai and G. Deutscher 1055

Angular and temperature dependences of the first critical field H_{c1} and of the vortices direction in $Y_1Ba_2Cu_3O_7$
C. Aguillon and S. Senoussi 1061

Thermopower of superconducting $YBa_2Cu_3O_{7-\delta}$ thin films
E.B. Lopes, R.T. Henriques, M. Almeida, J. Schubert, W. Zander, B. Stritzker, P.L. Reydet, Liu Chang Jun and C. Schlenker 1069

Decoupling and reversibility phenomena induced by low fields and hydrogen absorption for superconducting (4334) and (2223) bismuth compounds and $EuBa_2Cu_3O_7$
M. Nicolas, J. Negri and J.P. Burger 1076

Core and valence level photoemission study of the composition dependent metal to non-metal transition in thin film $Bi_{2.1}Sr_{1.7}Ca_{0.85-x}Y_xCu_2O_{8+\delta}$
M.S. Golden, S.J. Golden, R.G. Egdell and W.R. Flavell 1084

Reflectivity and transmission spectra of $Bi_2Sr_2Ca_1Cu_2O_8$ sputtered thin films
J. Bouvier, N. Bontemps, A.C. Boccara, S. Labdi and H. Raffy 1092

The mixed state of RBaCuO ceramic superconductors
Yu.V. Bugoslavsky and A.A. Minakov 1099

Temperature dependence of the NQR frequency of $YBa_2Cu_3O_{7-\delta}$ and NQR results for $Bi_2Sr_2Ca_2Cu_3O_y$ and $Tl_2Sr_2Ba_2Cu_3O_y$
H. Riesemeier, G. Stadermann, H. Kamphausen, K. Lüders, C. Politis and V. Müller 1106

Thermal behavior of positron lifetime in metal substituted oxide superconductors $YBa_2(Cu_{1-x}M_x)_3O_{7-y}$ (M=Fe, Ni)
S. Ishibashi, R. Yamamoto, M. Doyama and T. Matsumoto 1113

PAC- and channeling experiments in $YBa_2Cu_3O_{7-x}$
A. Bartos, H. Plank, D. Forkel, S. Jahn, J. Markel, R. Polewka, M. Uhrmacher, S. Winter, W. Witthuhn and the ISOLDE Collaboration 1121

Elastic properties of $YBa_2Cu_3O_x$, $(Y_{1-y}Pr_y)Ba_2Cu_3O_7$ and $(BiPb)_2Sr_2Ca_2Cu_3O_{10}$ studied by ultrasound
P. Lemmens, Ch. Hünnekes, Ph. Fröning, S. Ewert, H. Passing, G. Marbach and A. Comberg 1129

The high temperature magnetic susceptibility of $YBa_2Cu_3O_{7-\delta}$
A.J. Twin, J.S. Abell and I.R. Harris 1136

Stucture and properties of bulk oriented $YBa_2Cu_3O_x$
Th. Leventouri, E. Liarokapis, J.S. Faulkner, M. Calamiotou, V. Perdicatsis, Y.S. Hascicek and L.D. Testardi 1142

Spectroscopic studies of atmospheric degradation of Y–Ba–Cu–O superconducting materials
T.R. Cummins, R.G. Egdell and G.C. Georgiadis 1149

Comparative electron microprobe investigation of the Y–Ba–Cu–O thin films
V.V. Rezvitskii, I.I. Bondarenko, B.A. Treiger, L.N. Mazalov, V.E. Fyodorov, N.P. Dubinin, A.G. Amelichev, L.A. Volkov and V.F. Vratskikh 1157

SNMS studies of high temperature superconductor films on silicon
U. Breuer, W. Albrecht and H. Kurz 1164

Oxygen concentration gradients in Y–Ba–Cu–O
K. Pernestål, S. Olafsson, R. Wäppling and T. Lundström 1172

Physical properties and interface studies of $YBa_2Cu_3O_7$ thin films deposited by laser ablation on Si (111) with buffer layer
D.H.A. Blank, W.A.M. Aarnink, J. Flokstra, H. Rogalla and A. van Silfhout 1178

Effect of a magnetic field on the resistive transitions of artificial $YBa_2Cu_3O_7/PrBa_2Cu_3O_7$ superlattices
O. Brunner, J.-M. Triscone, L. Antognazza, L. Mieville, M.G. Karkut and Ø. Fischer 1186

A method to determine the orientation of superconductor surfaces and thin layers
P.V. Huong 1193

Structure of lead doped Bi–Sr–Ca–Cu–O superconductor as studied by micro-Raman spectroscopy
K.H. Kim, P.V. Huong, E.Oh-Kim, M. Lalhaye, S.K. Cho and B.C. Kwak 1201

X-ray emission spectroscopy and irradiation effects on thin-film high-T_c superconductors
J.-M. Mariot, V. Barnole, C.F. Hague, T. Frey, S. Siegmann and H.-J. Güntherodt 1209

Spectroscopic studies in the Bi–Sr–Ca–Cu–O family
P. Dupouy, T.P. Nguyen and E. Faulques 1216

Surface properties of cleaned ceramic and thin film $YBa_2Cu_3O_{7-z}$ samples heated in vacuum or exposed to H or Cl_2
J. Hockertz, J. Werno and H.J. Clemens 1224

Dielectric relaxations in non-metallic materials related to Y–Ba–Cu–O superconductors
H. Bennani, M. Guilloux-Viry, J.-C. Pilet, C. Perrin, A. Perrin and M. Sergent 1232

Microwave surface resistance and transport properties of superconducting $YBa_2Cu_3O_x$ films
O.G. Vendik, T.B. Samoilova, S.F. Karmanenko, L. Kowaliewicz, A.B. Kozyrev, J. Levoska and S. Leppävuori 1240

Microwave characterization of high-T_c superconductors with a dielectric resonator
O. Llopis and J. Graffeuil 1248

Microwave absorption, surface resistance and magnetization: Comparative studies of $YBa_2Cu_3O_7$ thin films
J. Dumas, S. Revenaz, C.J. Liu, R. Buder, C. Schlenker, S. Orbach, G. Müller, M. Hein, N. Klein and H. Piel 1252

Surface impedance measurements on coevaporated in situ grown $YBa_2Cu_3O_{7-\delta}$ thin films at 87 GHz
S. Orbach, N. Klein, G. Müller, H. Piel, P. Berberich and H. Kinder 1261

Section 8. Pinning, Relation of Microstructure and Properties

Observation of the flux line lattice in high-T_c superconductors
L.Ya. Vinnikov, L.A. Gurevich, V. Grigoryeva, A.E. Koshelev and Y.A. Osip'yan 1271
Magnetic properties and remanent magnetization studies of $YBa_2Cu_3O_7$ thin films
C.J. Liu, R. Buder, C. Schlenker, J. Schubert, W. Zander and B. Stritzker 1285
Investigation of flux distribution in YBaCuO thin films by means of the magneto-optical Faraday effect
A. Forkl, H.-U. Habermeier, G. Mertens, Th. Dragon and H. Kronmüller 1292
Direct study of the pinning anisotropy in HTSC
A. Polyanskii, L. Dorosinskii, M. Indenbom, V. Nikitenko, Y. Ossipyan and V. Vlasko-Vlasov 1300
Study of pinning behaviour in YBaCuO using the high-resolution Faraday effect
N. Moser, M.R. Koblischka and H. Kronmüller 1308
Thermally activated flux motion in epitaxial YBCO films
G.C. Xiong, S.Z. Wang, F.R. Wang, Q.D. Jiang, B. Yin, C.Y. Li and D.L. Yin 1316
Temperature dependent pinning mechanisms in ceramic $YBa_2Cu_3O_{7-\delta}$
L.R. Tessler, J. Provost, A. Maignan and F. Deslandes 1323
Determination of pinning potential energy for TlBaCaCuO superconductors
S.Y. Ding, Z. Yu, L. Qiu and H.M. Liu 1330
Characterization of high-temperature superconducting compounds by very low field ac susceptibility: The critical dynamic field as a universal quality factor
A. Mehdaoui, B. Loegel, D. Bolmont, G. Collin, J. Löhle and P. Wachter 1338
Investigation of grain boundaries using microcontacts
G. Schindler, B. Seebacher and K. Andres 1346
Enhancement of critical current in melt processed $Bi_2Sr_2CaCu_2O_8$ by irradiation with 400 MeV oxygen ions
H.-W. Neumüller, G. Ries, W. Schmidt, W. Gerhäuser and S. Klaumünzer 1351
Relationships between X-ray photoelectron spectra and superconductivity in Bi–O thin films
G. Dagoury, H. Raffi, S. Labdi and S. Megtert 1359
Influence of the oxygen content on the electronic structure of a clean superconducting $YBa_2Cu_3O_{7-x}$ thin film studied by XPS and XAES
H. Guyot, J. Schubert, W. Zander and B. Stritzker 1369

Existence and role of an amorphous layer at the grain surfaces of $YBa_2Cu_3O_{7-\delta}$ ceramics obtained by solid state sintering
J.M. Heintz, C. Magro, A. Tressaud, P. Dordor and J.P. Bonnet 1377

Grain orientation, electrical properties and magnetoresistance in highly textured $GdBa_2Cu_3O_7$ thin films
G. Matzen, J.-C. Ousset and H. Rakoto 1385

A.C. characterization of pyrosol and C.V.D. made high-T_c materials
F. Weiss, E. Senet, M. Langlet, O. Thomas, A. Pisch, R. Madar, J.C. Joubert and J.P. Senateur 1393

Fundamental and contingent parameters in the description of transport properties of high-T_c oxides
A. Raboutou, P. Peyral, C. Lebeau, J. Rosenblatt, J.P. Burin, Z.Z. Li and A. Perrin 1400

Microstructural features of epitaxial YBCO films: TEM study
T.X. Lin, J.L. Zhang, S.Z. Wang, G.C. Xiong and D.L. Yin 1408

Controlled microstructure formation in high-temperature superconductors by melt processing
G.J. Schmitz, H. Weiss and Ch. Wolters 1413

Low temperature internal friction spectrum of polycrystalline Y–Ba–Cu–O
Y. Mi, S. Sathish, R. Schaller, W. Benoit and H. Berger 1420

Micro-composite superconducting $Ag/Bi_4Sr_3Ca_3Cu_4O_{16+x}$ prepared by oxidation of a liquid quenched alloy precursor
J.S. Luo, F. Faudot, J.-P. Chevalier and D. Michel 1428

Section 9. Theoretical Models

Theories of high-T_c superconductivity – What have we learned in 3 years?
T.M. Rice 1439

Statistical mechanics of the local-pair superconductor: Phase diagrams and specific heats
L.J. de Jongh 1449

Model of local-pairs and effect of substitution for copper in high-T_c oxides
J. Kasperczyk and H. Büttner 1465

Spectroscopic function of the quasiparticles in YBaCuO systems
F. López-Aguilar, J. Costa-Quintana and S. Balle 1473

Pairing mechanism from dielectric response in high-T_c superconductors
F. López-Aguilar, J. Costa-Quintana and S. Balle 1480

Modelling of high-T_c superconductors by means of disordered Josephson-junction arrays
A. Giannelli and C. Giovannella 1488

Valence competition in high-T_c superconductors
X. Oudet and G.T. Bhandage 1498
Computer simulation study of real space hole-pairing in doped La_2CuO_4
X. Zhang and C.R.A. Catlow 1506
Cluster calculations on localized holes in La_2CUO_4
A.B. van Oosten, R. Broer, B.Th. Thole and W.C. Nieuwpoort 1514

Section 10. Applications

Edge junction SQUIDs and multilayers using high-T_c superconductors
R.B. Laibowitz, R.H. Koch, A. Gupta, W.J. Gallagher, B. Oh and J.M. Viggiano 1523
Microbridges in high-T_c superconductors: High I_cR_n products
Z.G. Ivanov, G. Brorsson and T. Claeson 1529
Surface impedance measurements on sputtered $YBa_2Cu_3O_{7-\delta}$ films and first experimental results on a high-T_c patch antenna
N. Klein, H. Chaloupka, G. Müller, S. Orbach, H. Piel, A. Pischke, H. Soltner, U. Poppe, K. Urban, Ch. Buchal, J. Schubert, G. Daalmans, U. Klein and M. Peiniger 1536
YBCO thin film DC SQUID on a sapphire substrate
D. Racah, N. Hess, U. Dai and G. Deutscher 1544
Observation of non-linear *I–V* curves in point contact measurements on a BaPbBiO single crystal
C.T. Jacobsen and M.T. Levinsen 1550
Structuring HTC-films by electron beam lithography
W. Albrecht, W. Langheinrich, H. Kurz, U. Poppe and H. Soltner 1558
Improved contact resistances by melt dipping of $Y_1Ba_2Cu_3O_{7-x}$
G.J. Schmitz, H. Weiss and Ch. Wolters 1566
Low resistance contacts to $YBa_2Cu_3O_{7-\delta}$ ceramics
C.A. Hollin, J.S. Abell and P.W. Gilberd 1571
Tunneling spectroscopy of $BaPb_{0.75}Bi_{0.25}O_3$
M. Suzuki, K. Komoriota, H. Nakano and L. Rinderer 1579
Optical response of highly granular YBaCuO films prepared by non-vacuum aerosol deposition
Q. Tang, A. Driessen, P. Hoekstra, L.T. Hilderink, A. van Silfhout and Th.J.A. Popma 1587

Author Index 1595
Keyword Index 1601